



## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[RTID 0648-XB146]

#### **Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Portsmouth Naval Shipyard Dry Dock 1 Modification and Expansion**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice; issuance of incidental harassment authorization.

**SUMMARY:** In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an IHA to the U.S. Navy (Navy) to incidentally harass, by Level B and Level A harassment, marine mammals incidental to Portsmouth Naval Shipyard (PNSY) Dry Dock 1 (DD1) modification and expansion in Kittery, Maine.

**DATES:** This authorization is effective from June 2, 2021 through June 1, 2022.

**FOR FURTHER INFORMATION CONTACT:** Carter Esch, Office of Protected Resources, NMFS, (301) 427-8421. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

#### **SUPPLEMENTARY INFORMATION:**

##### **Background**

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary

of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other means of effecting the least practicable adverse impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stocks for taking for certain subsistence uses (referred to here as “mitigation”). Monitoring and reporting of such takings are also required. The meaning of key terms such as “take,” “harassment,” and “negligible impact” can be found in section 3 of the MMPA (16 U.S.C. 1362 and the agency’s regulations at 50 CFR 216.103).

### **Summary of Request**

On October 22, 2020, NMFS received a request from the Navy for an IHA to take marine mammals incidental to modification and expansion of DD1 at PNSY in Kittery, Maine. The Navy submitted revised versions of the application on December 30, 2020, and January 19 and February 11, 2021. The application was deemed adequate and complete on February 19, 2021. The Navy’s request is for take of a small number of harbor porpoises, harbor seals, gray seals, harp seals, and hooded seals by Level B harassment and Level A harassment for a subset of these species. Neither the Navy nor

NMFS expects serious injury or mortality to result from this activity; therefore, an IHA is appropriate.

NMFS previously issued three IHAs to the Navy for waterfront improvement work, in 2016 (81 FR 85525; November 28, 2016), 2018 (83 FR 3318; January 24, 2018), 2019 (84 FR 24476, May 28, 2019), and a renewal of the 2019 IHA (86 FR 14598; March 17, 2021). As required, the applicant provided monitoring reports (available at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities>) which confirm that the applicant has implemented the required mitigation and monitoring, and which also shows that no impacts of a scale or nature not previously analyzed or authorized have occurred as a result of the activities conducted. This IHA covers the second year of a larger five-year project, for which the Navy also intends to request take authorization for subsequent dock modification and expansion at the PNSY.

### **Description of the Specified Activity**

As part of its overall objective to modernize and maximize dry dock capabilities for performing current and future missions efficiently and with maximum flexibility, the Navy plans to modify and expand DD1 at the PNSY by constructing two new dry docking positions capable of servicing Virginia class submarines within the super flood basin of the dry dock. The in-water portion of the dock modification and expansion, which will occur within and at the boundaries of the super flood basin, includes: construction of the west closure wall, construction of entrance structure closure walls, and bedrock excavation. Construction activities include in-water impact pile driving, vibratory pile driving and removal, rock drilling, and underwater blasting. Underwater sounds produced by these activities may result in Level B harassment and Level A harassment of marine mammal species.

In-water construction activities are expected to occur between June 2021 and June 2022, with an estimated total of 29 days for pile driving and pile removal, 130 days for drilling of blast charge holes, and 130 days of blasting for bedrock excavation, for a total of 289 construction days. Some of these activities will occur on the same day, resulting in 159 total construction days over 12 months. However, as a conservative measure, construction days are accounted for as consecutive rather than concurrent activities in take estimates (see **Estimated Take** section). All in-water construction work will be limited to daylight hours, with the exception of pre-dawn (beginning no earlier than 3:00 AM) drilling of blast charge holes; drilling will not occur from sunset to pre-dawn. The daily construction timeframe for blasting will begin no sooner than 30 minutes after sunrise to allow for initial marine mammal monitoring to take place and will end at least 60 minutes before sunset to allow for post-activity monitoring.

A summary of in-water pile driving activity is provided in Table 1. In addition, a total of 1,580, 4.5-inch blast charge holes will be drilled at a rate of 12 holes per day over 130 days. The Navy anticipates one to two blast events per day, with a maximum of 6 blast events per week; a total of 150 blast events will occur over 130 days.

**Table 1. Summary of In-water Pile Driving Activities.**

Pile purpose	Pile type	Pile size (inch)	Pile drive method	Total piles	Piles /day	Work days
West closure wall template	Steel pipe	30	Vibratory	13 installed	3	5
				13 removed	3	5
West closure wall construction	Flat-webbed steel sheet	18	Vibratory	160	12	13
			Impact			
Entrance structure temporary guide dolphin removal	Steel pipe	30	Vibratory	12	8	2
Entrance structure closure wall construction	Steel sheet	28	Vibratory	44	12	4
			Impact			
Total				242		29

Construction activities will occur at the PNSY in Kittery, Maine. Please see Figures 1-1 to 1-6 in the Navy's IHA application for detailed maps of the project area and

super flood basin. A detailed description of the planned modification and expansion of DD1 is provided in the **Federal Register** notice for the proposed IHA (86 FR 18244; April 8, 2021). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice and the original proposed IHA documents referenced therein for a detailed description of the specified activity.

### **Comments and Responses**

A notice of NMFS' proposal to issue an IHA to the Navy was published in the **Federal Register** on April 8, 2021 (86 FR 18244). That notice described, in detail, the Navy's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission (Commission). For full details of the comments, please see the Commission's letter, which is available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities#active-authorizations>. A summary of the Commission's recommendations as well as NMFS' responses is below.

#### *Comment 1:*

As a result of its belief that NMFS did not provide the public with an adequate basis for review of NMFS' proposed action, due to what it asserts are errors in the notice of the proposed authorization, the Commission recommends that NMFS either deny the proposed incidental harassment authorization or publish a revised **Federal Register** notice and draft authorization with another 30-day comment period.

#### *Response:*

NMFS does not agree with the Commission and does not adopt the recommendation. Although the initial **Federal Register** notice and proposed authorization contained certain errors and omissions, which have been addressed in this

notice and authorization according to the Commission's recommendations, the description of the specified activity and analysis of potential acoustic impacts on marine mammals in the vicinity of the project area in the notice of the proposed authorization (86 FR 18422; April 8, 2021) provided sufficient information upon which to determine whether or not the activities would have a negligible impact on the species or stocks for which take is likely to occur, and on which the public had an opportunity to comment. The information utilized in take estimation (*i.e.*, source levels, thresholds, densities, and number of construction days for each specified activity) has largely been retained from the proposed to the final authorization, with the exception of revised source levels for impact pile driving of an 18-inch flat-webbed sheet pile (which reduced the harassment zone sizes and take estimates for gray and harbor seals). The Commission noted that the thresholds associated with slight lung injury and mortality were incorrectly specified in the notice of the proposed IHA. However, the distances to the isopleths for onset of and 50 percent probability of gastrointestinal tract injury, and the resulting estimate of zero take for harbor porpoises and phocids, provided accurate information regarding the potential for this type of non-auditory injury. The distances to thresholds associated with gastrointestinal injury (harbor porpoises, 26 meters (m); phocids, 26 m), slight lung injury (harbor porpoises, 48 meters; phocids, 34 m) and mortality (harbor porpoises, 21 m; phocids, 18 m) calculated for the City of Juneau's Statter Harbor Project (see 84 FR 11066; March 25, 2019) are similar to each other in magnitude. The distances to slight lung injury and mortality thresholds are not expected to be substantially different for blasting at PNSY than those calculated for Statter Harbor, and would likely be within tens of meters from those estimated here for onset of and 50 percent probability of gastrointestinal tract injury. All of these zones would be smaller than the Level A harassment zones for harbor porpoises and phocids, and would be encompassed by the large shutdown zone for blasting at DD1. The mitigation requirements for blasting

events, including the use of stemmed charges, installation of a double bubble curtain across openings to the super flood basin in which blasting will occur, and implementation of shutdown procedures, are sufficiently protective to minimize the potential for non-auditory injury such that the potential for non-auditory injury is considered discountable. No mortality is anticipated or authorized for these activities. Per the Commission's recommendations, additional mitigation and monitoring requirements for blasting have been incorporated into the issued authorization.

The majority of the Commission's comments pertained to errors or inconsistencies that have been addressed in this notice and the final authorization. NMFS' small numbers finding and negligible impact determination were not affected by the changes from the proposed to the final authorization; therefore, NMFS is not republishing a notice of the proposed authorization.

*Comment 2:*

The Commission recommends that NMFS return the IHA application to the Navy as incomplete and refrain from processing future authorization applications until the Commission's perceived issues are resolved.

*Response:*

NMFS appreciates the Commission's concern but will consider any future requests for incidental take authorization from the Navy according to the requirements of the MMPA.

**Changes from the proposed IHA to the final IHA**

The following corrections and additions have been incorporated into this notice and/or the issued IHA:

- Corrected the reference for the 28-inch Z-shaped sheet pile source level (NAVFAC 2020; Table 6);

- Revised source levels for impact pile driving of 18-inch flat-webbed sheet piles, as well as all associated acoustic analyses and take estimation;
- Included a description of transmission loss modeling, as well as the coefficients used to estimate Level B harassment zones for construction activities;
- Included the input parameters used to estimate Level A harassment zones for pile driving and removal, and blast-charge hole drilling (Table 8);
- Corrected distance to the Level B harassment isopleth for removal of 30-inch steel pipe piles to 13.6 kilometers (km) from 46 km (Table 8);
- Corrected typographical errors specifying ensonified zones in Tables 8 and 9;
- Included ranges to peak SPL thresholds for PTS for blasting events as a footnote of Table 9;
- Refined identification of the specific activities to which take is attributed (Table 11);
- Corrected take estimate for harbor porpoises (reduced from 6 to 4) to align with the IHA application, and adjusted take estimates for impact pile driving of 18-inch flat-webbed sheet piles based on revised source levels (Table 11);
- Added additional mitigation requirements for blasting, including 1) requiring stemmed charges, 2) restricting blasting to a time period at least 30 minutes after sunrise and one hour before sunset, 3) requiring monitoring to occur for at least one hour after blasting activities cease, 4) requiring that the Navy notify NMFS and the Greater Atlantic Regional Stranding Coordinator or local stranding network at least 24 hours prior to commencing a blasting event and within 24 hours after a blasting event ceases (if occurring on consecutive days, the Navy can provide notice of how long blasting is scheduled to last and when it has been completed), and 5) requiring that the Navy immediately report any injured or dead marine mammal to the Greater Atlantic Regional Stranding Coordinator or local



stranding network and follow any instructions provided by the Stranding

Coordinator or stranding network;

- Clarified the number and potential locations of Protected Species Observers (PSOs);
- Clarified that pile driving/removal must only occur during daylight hours;
- Clarified in this notice that 10, 18-inch flat-webbed piles will be acoustically monitored during vibratory and impact pile driving, and 4, 30-inch steel piles will be monitored during vibratory pile driving, as was included in the draft IHA;
- Added hydroacoustic monitoring plan, which can be accessed at:  
*<https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities#active-authorizations>*;
- Corrected contact information and requirements for reporting a dead or injured marine mammal to provide consistency between this notice and the IHA;
- Clarified that the IHA condition 4(e) applies to all activities; and

### **Description of Marine Mammals in the Area of Specified Activities**

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs;

*<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>*) and more general information about these species (e.g., physical and behavioral descriptions) may be found on NMFS' website:

*(<https://www.fisheries.noaa.gov/find-species>).*

Table 2 lists the five marine mammal species, including one cetacean and four pinnipeds, with the potential to occur in the area of the specified activity and for which

take is authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, NMFS follows Committee on Taxonomy (2020). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. Atlantic Marine Mammal SARs. All values presented in Table 2 are the most recent available at the time of publication and are available in the final 2019 SARs (Hayes *et al.*, 2020) and draft 2020 SARs, available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports>).

**Table 2. Marine Mammals with Potential Presence within the Project Area.**

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR	Annual M/SI <sup>3</sup>
Order Cetartiodactyla – Cetacea – Superfamily Odontoceti (toothed whales)						
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	-; N	95,543 (0.31; 74,034; 2016)	851	217
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic	-; N	75,834	2,006	350

				(0.15, 66,884; 2012)		
Gray seal	<i>Halichoerus grypus</i>	Western North Atlantic	-; N	27,131 <sup>4</sup> (0.19; 23,158; 2016)	1,389	4,729
Harp seal	<i>Pagophilus groenlandicus</i>	Western North Atlantic	-; N	Unknown (NA, NA)	unk	232,422
Hooded seal	<i>Cystophora cristata</i>	Western North Atlantic	-; N	Unknown (NA, NA)	unk	1,680

1 - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

2 - NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region#reports>. CV is coefficient of variation; N<sub>min</sub> is the minimum estimate of stock abundance.

3 - These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

4 - NMFS stock abundance estimate applies to U.S. population only, actual stock abundance is approximately 451,431. The PBR value presented is in relation to the U.S. population, whereas the annual M/SI value is for the entire stock.

Detailed descriptions of the species likely to be affected by the Navy's activities, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence were provided in the notice of the proposed IHA (86 FR 18244; April 8, 2021). Since that time, NMFS is not aware of any substantive new information regarding these species or stocks; therefore, detailed descriptions are not provided here. Please refer to that notice for descriptions. Please also refer to NMFS' website ([www.fisheries.noaa.gov/find-species](http://www.fisheries.noaa.gov/find-species)) for generalized species accounts.

### *Marine Mammal Hearing*

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (e.g., Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on

directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

**Table 3. Marine Mammal Hearing Groups (NMFS, 2018).**

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i> )	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite ( <i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. As mentioned previously, five marine mammal species (one cetacean and four pinniped (all phocid) species) have the reasonable potential to co-occur with the construction activities. Please refer to Table 2. The only cetacean species that may be present, the harbor porpoise, is classified as a high-frequency cetacean.

### **Potential Effects of Specified Activities on Marine Mammals and their Habitat**

The effects of underwater noise from impact pile driving, vibratory pile driving and removal, drilling, and blasting activities for the Navy's modification and expansion of DD1 have the potential to result in Level B harassment (behavioral disturbance, TTS) for marine mammal species authorized for take. Level A harassment (injury) in the form of PTS may also occur in limited numbers of animals. No other forms of Level A harassment would occur, nor would serious injury or mortality. The project would not result in permanent impacts to habitats used directly by marine mammals, such as haulout sites, but may have potential short-term impacts to food sources such as forage fish and impacts to the substrate during installation and removal of piles and as a result of bedrock removal. The **Federal Register** notice of the proposed IHA (86 FR 18244; April 8, 2021) included a discussion of the potential effects to marine mammals and their associated habitat, therefore, that information is not repeated here; please refer to the notice of proposed IHA for more details.

### **Estimated Take**

This section provides an estimate of the number of incidental takes authorized by the IHA, which informed both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA

defines “harassment” as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be primarily by Level B behavioral harassment, as noise generated from in-water pile driving (vibratory and impact), drilling, and blasting has the potential to result in disruption of behavioral patterns for individual marine mammals. The use of the explosive source (*i.e.*, blasting) for a very short period each day has the potential to result in Temporary Threshold Shift (TTS), which is another form of Level B harassment. There is also some potential for auditory injury (Level A harassment) to result from impact pile driving and blasting in the form of Permanent Threshold Shift (PTS). The required mitigation and monitoring measures (see **Mitigation Requirements** and **Monitoring and Reporting Requirements** sections) are expected to minimize the severity of such taking to the extent practicable.

The primary relevant mitigation measure to minimize Level A harassment is delaying these activities, to the extent practicable, when any marine mammal is observed in the Level A harassment zones for PTS. While this requirement is expected to minimize take by Level A harassment, NMFS is authorizing takes by Level A harassment (in the form of PTS) to account for the possibility that marine mammals escape observation in the PTS zone and because the shutdown zones (see **Mitigation Requirements** section) are, in most cases, smaller than the Level A harassment zones. The distances to thresholds associated with the onset of and 50 percent probability of injury to the gastrointestinal tract for harbor porpoises (5 meters (m)) and phocids (9 m) are small enough that the mitigation and monitoring measures are expected to avoid the potential for such taking. As mentioned previously, distances to thresholds for slight lung injury

and mortality are not modeled here, but are expected to have a similar small magnitude and range of values (tens of meters) as those reported for the Statter Harbor project (84 FR 11066; March 25, 2019). In conjunction with small zone sizes for onset of and 50 percent probability of gastrointestinal tract injury and NMFS' expectation that zone sizes for slight lung injury will be small, blasting will occur in a confined area that allows for effective observation with only one entrance to the basin that will be blocked by a bubble curtain during blasting events, within a large shutdown zone equivalent to the Level A harassment zone for harbor porpoises, all of which make it unlikely that these types of non-auditory injuries will occur. Therefore, the potential for non-auditory physical injury is considered discountable, and any takes by Level A harassment are expected to occur due to PTS.

As described previously, no mortality is anticipated or authorized for these activities. The method by which take is estimated is described below.

Generally speaking, NMFS estimates take by considering: (1) acoustic thresholds above which NMFS believes marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. NMFS notes that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, NMFS describes the factors considered here in more detail and presents the authorized take.

#### *Acoustic Thresholds*

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably

expected to be behaviorally harassed or experience TTS (equated to Level B harassment), or to incur PTS of some degree (equated to Level A harassment). Thresholds have also been developed to identify the pressure levels above which animals may incur different types of tissue damage from exposure to pressure waves from explosive detonations.

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner NMFS considers Level B behavioral harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1  $\mu$ Pa (rms) for continuous (*e.g.*, vibratory pile-driving, drilling) and above 160 dB re 1  $\mu$ Pa (rms) for impulsive and/or intermittent (*e.g.*, impact pile driving) sources.

The Navy's Portsmouth Naval Shipyard modification and expansion project includes the use of continuous, or non-impulsive, (*i.e.*, vibratory pile driving and drilling) and impulsive (*i.e.*, impact pile driving) sources; therefore, the 120 and 160 dB re 1  $\mu$ Pa (rms) thresholds are appropriate.

Level A harassment for non-explosive sources – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (NMFS, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of



exposure to noise from two different types of sources (impulsive or non-impulsive). As noted above, the Navy’s planned activity includes the use of impulsive and non-impulsive sources.

These thresholds are provided in Table 4. The references, analysis, and methodology used in the development of the thresholds are described in NMFS’ 2018 Technical Guidance, which may be accessed at:

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.

**Table 4. Thresholds Identifying the Onset of Permanent Threshold Shift.**

Hearing Group	PTS Onset Acoustic Thresholds* (Received Level)	
	Impulsive	Non-impulsive
High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$ : 202 dB $L_{E,HF,24h}$ : 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$ : 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$ : 218 dB $L_{E,PW,24h}$ : 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$ : 201 dB
<p>* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.</p> <p><u>Note:</u> Peak sound pressure (<math>L_{pk}</math>) has a reference value of 1 <math>\mu</math>Pa, and cumulative sound exposure level (<math>L_E</math>) has a reference value of 1 <math>\mu</math>Pa<sup>2</sup>s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (HF cetaceans and PW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (<i>i.e.</i>, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.</p>		

Explosive sources – Based on the best available science, NMFS uses the acoustic and pressure thresholds indicated in Table 5 to predict the onset of behavioral harassment, PTS, and non-auditory impacts. Because of the instantaneous nature of blasting, there is no established Level B behavioral harassment threshold associated with the activity. A single detonation is not likely to disrupt behavioral patterns beyond a brief startle

response, therefore, the 160 dB re 1  $\mu$ Pa (rms) threshold for behavioral harassment from impulsive acoustic sources is not applicable. However, TTS, which (as mentioned previously) is a form of Level B harassment take, may occur. The behavioral threshold used in analyses for multiple explosive events is determined relative to (5 dB less than) the TTS onset threshold (DoN 2017). The threshold associated with the onset of effect for non-auditory injury to the gastrointestinal tract (237 dB re 1  $\mu$ Pa (peak)) is used to determine the distances at which there is a one percent likelihood of injury occurring, informing mitigation measures rather than take estimates (DoN 2017). Take estimates are based on the 243 dB re 1  $\mu$ Pa (peak) threshold, the criterion used to predict the distances at which there is a 50 percent probability of gastrointestinal injury resulting from underwater explosions (DoN 2017). During the public comment period, the Marine Mammal Commission noted that the thresholds for slight lung injury and mortality were incorrectly specified in the notice of the proposed IHA. However, the distances to isopleths associated with the onset of and 50 percent probability of gastrointestinal injury were correctly modeled, resulting in very small zone sizes, and the zone sizes for slight lung injury and mortality (although not presented here) are expected to be commensurate with those modeled for the City of Juneau's Statter Harbor project (84 FR 11066; March 25, 2019), given that both projects 1) analyze acoustic impacts of confined blasting in drill shafts in underwater bedrock within a harbor/basin, 2) utilize the same sound exposure level for blasting events, and 3) estimate transmission loss by combining spherical spreading with frequency-specific absorption loss to the environment. The size of the shutdown zone for blasting, relative to these small zones, is sufficiently large to discount the potential for this type of injury. The shutdown zone for blasting equates to the Level A harassment zone for harbor porpoises, which is a 0.335 square kilometers ( $\text{km}^2$ ) arc-shaped area that encompasses the super flood basin and extends into the Piscataqua River (shown in Figure 6-5 of the IHA application). This shutdown zone fully

encompasses the Level A harassment zone for phocids (0.01978 km<sup>2</sup>), and onset of (0.000254 km<sup>2</sup>) and 50 percent probability of (0.0008 km<sup>2</sup>) gastrointestinal injury zone, Further, the Navy will not begin blasting activities until one sheet pile face of the west closure wall is installed, thus providing an additional barrier to sound propagating into the environment beyond the super flood basin (reducing the maximum ensonified zone from 0.418 km<sup>2</sup> to 0.335 km<sup>2</sup>). In addition, the Navy will install a double bubble curtain at the entrance to the super flood basin during blasting and drilling activities within the basin, the attenuation from which (although not incorporated into the acoustic analyses presented here) will further reduce the impact of sound produced during these activities. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at:

<http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm>.

**Table 5. Explosive Acoustic and Pressure Thresholds for Marine Mammals.**

Group	Level B harassment		Level A harassment	Non-auditory	
	Behavioral (multiple detonations)	TTS	PTS	Gastro-intestinal tract (Onset of Effect)	Gastro-intestinal tract (Injury)
High-Frequency (HF) Cetaceans	135 dB SEL	140 dB SEL or 196 dB SPL <sub>pk</sub>	155 dB SEL or 202 dB SPL <sub>pk</sub>	237 dB SPL <sub>pk</sub>	243 dB SPL <sub>pk</sub>
Phocid Pinnipeds (PW) (Underwater)	165 dB SEL	170 dB SEL or 212 dB SPL <sub>pk</sub>	185 dB SEL or 218 dB SPL <sub>pk</sub>		

### *Ensonified Area*

The operational and environmental parameters of the activity that fed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss, are described below.

### Source Levels

The project includes impact pile driving, vibratory pile driving and pile removal, drilling, and blasting. Of these, only drilling and vibratory pile driving will occur

concurrently. When two continuous noise sources have overlapping sound fields, there is a potential for higher sound levels (and a larger associated ensonified zone) than for non-overlapping sources. When drilling and vibratory pile driving co-occur, the larger of the two shutdown zones will trigger mitigation measures.

Source levels of pile driving activities are based on reviews of measurements of the same or similar types and dimensions of piles available in the literature. Source levels for impact pile driving of a 30-inch steel pipe pile are used as a proxy for impact driving of 28-inch Z-shaped steel sheet piles (NAVFAC, 2020). Similarly, source levels for impact pile driving of an 18-inch flat-webbed sheet pile were unavailable, so proxy values for installation of a 24-inch Z-shaped sheet pile are used. In the notice of the proposed IHA, the proxy source levels were incorrectly specified. As a result of NMFS' review of public comment, the approach to estimating the source levels for this pile type was modified by taking the mean of the maximum values for each type of sound level in Table 1.6-5 of CALTRANS (2015), resulting in the decreased source levels shown in Table 6.

The source levels in Table 6 are assumed for pile driving and drilling underwater noise produced by construction activities.

**Table 6. Summary of In-water Pile Driving Source Levels (at 10 m from source).**

Pile Type	Installation/Extraction Method	Pile Diameter (inch)	SPL <sub>pk</sub> , dB re 1 $\mu$ Pa	SPL <sub>rms</sub> , dB re 1 $\mu$ Pa	SEL, dB re 1 $\mu$ Pa <sup>2</sup> -s
Z-shaped steel sheet <sup>1,3</sup>	Vibratory <sup>2</sup>	28	NA	167	167
	Impact <sup>3</sup>	28	211	196	181
Flat-webbed steel sheet <sup>1,4</sup>	Vibratory	18	NA	163	163
	Impact	18	201	183	172
Steel pipe <sup>2</sup>	Vibratory	30	NA	167	167
Blast holes <sup>5</sup>	Drilling	4.5	NA	166.2	166.2

Key: dB=decibels; NA = Not applicable; dB re 1  $\mu$ Pa = dB referenced to a pressure of 1 micropascal, measures underwater SPL. dB re 1  $\mu$ Pa<sup>2</sup>-s = dB referenced to a pressure of 1 micropascal squared per second, measures underwater SEL

<sup>1</sup> = A proxy value for 28-inch sheet piles could not be found for impact and vibratory driving so the proxy for a 30-inch steel pipe pile has been used (NAVFAC SW 2020). A proxy value for 18-inch flat-webbed sheet piles could not be found for impact and vibratory driving so the proxy for a 24-inch Z-shaped sheet pile has been used (CALTRANS 2015)

Sources: DoN 2015<sup>2</sup>; NAVFAC SW 2020<sup>3</sup> CALTRANS 2015<sup>4</sup>; Denes *et al*, 2016<sup>5</sup>

The proxy source level for drilling of blast-charge holes is derived from Denes *et al.* (2016), which reports sound pressure levels measured during rock socket drilling at Kodiak Ferry Terminal in Alaska. The size of the blast-charge holes considered here (4.5-inch) is much smaller than the size of the drilled holes (24-inch) in Denes *et al.* (2016), making the use of 166.2 dB re 1  $\mu$ Pa conservative.

There are no data on sound source levels from explosives used under circumstances identical to the blasting activity described here (*e.g.*, charge composition and weight, bathymetry, substrate composition, and the dimensions of holes for stemmed charge placement). Therefore, the Navy made approximations by reference to mathematical models that have been empirically validated, under roughly comparable circumstances, to estimate source levels both in terms of absolute peak sound pressure level (SPL in units of dB re 1  $\mu$ Pa) and sound exposure level (SEL in units of dB re 1  $\mu$ Pa<sup>2</sup>-s) (Table 7). The peak source level calculation of a confined blast follows Cole's (1948) equation and a regression curve from the Miami Harbor Deepening Project (Hempen *et al.* 2007), using a distance of 2.4 m and a weight of 120 pounds (lbs) for a single charge. Based on this approach, the peak source level for the project is estimated to be 257 dB re 1  $\mu$ Pa for a 120 lb charge. Following Urick (1983), the Navy estimated the SEL for 30, 120 lb charges at 1 m by first calculating the instantaneous pressure following the onset of a shock wave, as a relationship between peak pressure and time. Blasting operations will involve detonating 120 lb up to 30 times in rapid succession, with a split second delay between each detonation. Without specific information regarding the layout of the charges, the modeling assumes a grid of 2.4 m by 2.4 m charges for the majority of the super flood basin, and 1.5 m by 1.8 m for the rows closest to Berth 11. Due to time and spatial separation of each single charge by a distance of 2.4 m, the accumulation of acoustic energy is added sequentially, assuming the transmission

loss follows cylindrical spreading within the matrix of charges. Using this approach for multiple confined charges, the modeled source SEL for 30, 120 lb charges at 1 m is estimated to be 227 dB re 1 $\mu$ Pa<sup>2</sup>-s. Please see the Navy's IHA application for more details regarding these calculations.

**Table 7. Blasting Source Levels.**

Explosive charge	SPL <sub>pk</sub> , (dB re 1 $\mu$ Pa)	SEL (dB re 1 $\mu$ Pa <sup>2</sup> -s)
30 x 120 lb charge	257	227

These source levels for pile driving, drilling, and blasting are used to estimate the Level B harassment zones and calculate the Level A harassment zones.

#### Level B Harassment Zones

Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

$$(1) TL = B * \log_{10}(R1/R2)$$

Where,

R1 = the distance of the modeled SPL from the driven pile, and

R2 = the distance from the driven pile of the initial measurement.

The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field)

environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source ( $20 \cdot \log[\text{range}]$ ). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source ( $10 \cdot \log[\text{range}]$ ). A practical spreading value of 15 is often used under conditions, such as at the Shipyard dock, where water increases with depth as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions. The Level B harassment distances for construction activities are calculated using practical spreading (impact and vibratory pile driving, drilling) and spherical spreading with absorption (blasting), which includes an additional term in the equation that accounts for frequency-specific transmission loss to the environment due to absorption, using the source levels provided in Tables 6 and 7, respectively.

Ensonified areas ( $A$ ) are calculated using the following equation.

$$(2) A = \pi R^2$$

Where,

$R$  is the harassment distance.

However, the maximum distance from the source is capped due to landmass interception in the surrounding area. For this reason, the maximum area that could be ensonified by noise from pile driving and drilling is an estimated  $0.418 \text{ km}^2$ . Therefore, all harassment zones that are larger than  $0.418 \text{ km}^2$  are corrected to this maximum value. The maximum ensonified area for blasting is smaller ( $0.335 \text{ km}^2$ ) because, prior to the removal of bedrock, a portion of the west closure wall will be installed, providing an additional boundary between noise produced within the super flood basin and the surrounding environment.

## Level A Harassment Zones

When the original NMFS Technical Guidance (2016) was published, in recognition of the fact that the ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, NMFS developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. NMFS notes that because of some of the assumptions included in the methods used for these tools, NMFS anticipates that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as in-water vibratory and impact pile driving, NMFS User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the entire duration of the activity, it would not incur PTS. Inputs used in the User Spreadsheet (*i.e.*, pile driving duration or number of strikes per pile, and the number of piles installed or removed per day) used to calculate distances to the Level A harassment isopleths for pile driving and drilling are shown in Table 8.

For blasting, the calculated distances to Level A harassment thresholds are based on a single blast event per day. The Navy plans to conduct 150 blast events over 130 days, so on the majority of construction days (110) only one blast event will occur. NMFS recognizes that if two blasts do occur on a single day, the cumulative SEL for the 24-hour timeframe over which blasting occurs would be higher than that analyzed here. However, the distances to the Level A harassment thresholds in Table 9 do not reflect the attenuating influence of the double bubble curtain that will be in place across any



openings between the super flood basin and the surrounding environment during blasting events. If multiple blast events occur within a 24-hour period, they will be separated by 4 to 5 hours. It is likely that if marine mammals are present in the vicinity of the construction area (outside of the shutdown zone) during the first blast event they will avoid the area for at least the remainder of day.

Blasting will occur at multiple locations within the super flood basin. The minimum and maximum distances from the blasting locations to the center of the entrance to the super flood basin are 37.5 and 160 m, respectively. Acoustic modeling is based on the location closest to the entrance to the basin; the resulting distances to Level B harassment and Level A harassment isopleths are, therefore, a conservative estimate of the maximum extent of potential acoustic impact outside of the basin. The distance to the Level A harassment isopleth for blasting for harbor porpoises (1,007 m) is larger than that for phocids (110 m), but the density of harbor porpoises near the construction area is very low (see *Marine Mammal Occurrence* section). Harbor seals and gray seals are more common, but the distance to the Level A harassment isopleth for phocids is fully encompassed by the shutdown zone.

The Level A harassment zones are calculated using the same Equation (2). For all pile driving/drilling activities, ensonified areas are based on distances to the cumulative SEL Level A harassment thresholds using the NMFS acoustic guidance (NMFS 2018) because they were larger than the values calculated against the  $SPL_{peak}$  criteria. Following the approach used for estimating Level B harassment zones, if the calculated value is larger than the maximum potential ensonified zone, Level A harassment zones are corrected to 0.418 km<sup>2</sup> for pile driving activity and 0.335 km<sup>2</sup> for blasting activity.

The calculated distances to Level A harassment and non-auditory injury (to the gastrointestinal tract) isopleths, estimated distances to Level B harassment isopleths, and

associated ensounded areas for the marine mammal species likely to be affected by the construction activities are provided in Tables 8 and 9.

**Table 8. Distances and Areas of Harassment Zones for Pile Driving and Drilling.**

Activity	Pile size, type, and rate	Number of strikes/pile or Duration	Number of days	Level A harassment				Level B harassment	
				HF cetacean		Phocid		harassment	
				Dist. (m)	Area (km <sup>2</sup> )	Dist. (m)	Area (km <sup>2</sup> )	Dist. (m)	Area (km <sup>2</sup> )
Impulsive									
Construct west closure wall	18-inch flat-webbed sheet pile (12 pile/day)	300	13	516	0.258	232	0.068	341	0.126
Entrance structure closure walls	28-inch Z-shaped sheet pile (12 pile/day)	300	4	2,056	0.418	923	0.395	2,512	0.418
Non-impulsive									
Construct west closure wall	18-inch flat-webbed sheet pile (12 pile/day)	5 min/pile 60 min/day	13	13.7	0.000556	5.6	0.00098	7,356	0.418
Install west closure wall template	30-inch steel pipe pile (3 pile/day)	5 min/pile 15 min/day	5	10.1	0.000319	4.1	0.000053	13,594	0.418
Remove west closure wall template	30-inch steel pipe pile (3 pile/day)	5 min/pile 15 min/day	5	10.1	0.000319	4.1	0.000053	13,594	0.418
Remove temporary dolphins	30-inch steel pipe pile (8 pile/day)	5 min/pile 40 min/day	2	19.4	0.01068	8.0	0.001996	13,594	0.418
Entrance structure closure walls	28-inch Z-shaped sheet pile (12 pile/day)	5 min/pile 60 min/day	4	25.4	0.00174675	10.4	0.000338	13,594	0.418
Bedrock drilling for blast charges	4.5-inch (1,580 holes)	12 hr/day	130	7	0.000153	4.3	0.000058	12,023	0.418

\* 0.418 km<sup>2</sup> is the maximum ensounded area in the project area for pile driving and drilling due to landmass interception of sound propagation.

**Table 9. Distances and Areas of Harassment Zones for Blasting.**

Blasting Events and Charge	Blasting Days	Level A (PTS onset) Harassment <sup>1</sup>		Level B (Behavioral) Harassment		Non-Auditory Injury (Gastrointestinal tract)	
		Harbor Porpoise Distance to 155 dB SEL <sub>cum</sub> Threshold/Area of ZOI	Phocids Distance to 185 dB SEL <sub>cum</sub> Threshold/Area of ZOI	Harbor Porpoise Distance to 135 dB SEL <sub>cum</sub> Threshold/Area of ZOI	Phocids Distance to 165 dB SEL <sub>cum</sub> Threshold/Area of ZOI	Phocid/Harbor Porpoise Distance to 237 dB Peak Pressure Threshold/Area of ZOI (Onset of Effect)	Phocid/Harbor Porpoise Distance to 243 dB Peak Pressure Threshold/Area of ZOI (Injury)
5 – 30 blasts per event, 120-lb charge per blast event, 150 blast events	130 (1-2 events/day)	1,007 m/ 0.335 km <sup>2</sup>	110 m/ 0.01978 km <sup>2</sup>	2,131 m/ 0.335 km <sup>2</sup>	577 m/ 0.27636 km <sup>2</sup>	9 m/ 0.000254 km <sup>2</sup>	5 m/ 0.00008 km <sup>2</sup>

\* 0.335 km<sup>2</sup> is the maximum ensonified area for blasting in the project area due to landmass interception of sound propagation

<sup>1</sup> Distance to 202 dB SPL<sub>peak</sub> threshold for harbor porpoises is 19 m, and to 218 dB SPL<sub>peak</sub> threshold for phocids is 3 m.

### *Marine Mammal Occurrence*

Marine mammal density estimates for the harbor porpoise, harbor seal, and gray seal are based on marine mammal monitoring observations during 2017 and 2018 (CIANBRO 2018a,b). Density values were calculated from visual sightings of all marine mammals divided by the monitoring days (total of 154 days) and the total ensonified area in which the sightings occurred in the 2017 and 2018 activities (0.8401 km<sup>2</sup>). Details used for calculations are provided in Table 10 and described below.

**Table 10. Marine Mammal Sightings and Resulting Density in the Vicinity of Portsmouth Naval Shipyard.**

Species	2017 sighting (96 days)	2018 sighting (58 days)	Total sighting	Density (animal/day/km <sup>2</sup> )
Harbor porpoise	3	2	5	0.04
Harbor seal	199	122	321	2.48
Gray seal	24	2	26	0.20

Hooded and harp seals are much rarer than harbor and gray seals in the Piscataqua River, and no density information for these two species is available. To date, marine mammal monitoring for the Berth 11 Waterfront Improvements Construction project has not recorded a sighting of a hooded or harp seal in the project area (Cianbro 2018ab; NAVFAC Mid-Atlantic 2018, 2019b; Navy 2019; Stantec 2020); however, two harp seals were observed outside of the timeframe of dedicated marine mammal monitoring of Berth 11 pile-driving activities, one on May 12, 2020 and one on May 14, 2020 (Stantec 2020). The Navy requested authorization of take for these two species, given the potential for occurrence, and NMFS is acting on that request.

### *Take Calculation and Estimation*

The approach by which the information provided above is brought together to produce a quantitative take estimate is described here.

For marine mammals with calculated density information (*i.e.*, harbor porpoise, harbor seal, and gray seal), in general, estimated Level B harassment and Level A harassment take numbers are calculated using the following equation:

$$\text{Estimated take} = \text{animal density} \times \text{ensonified area} \times \text{operating days} \quad (3)$$

However, in consideration of the prevalence of seals in the project area and in accordance with the approach utilized in IHAs previously issued to the Navy for expansion and modification of DD1, NMFS has determined that it is appropriate to increase the number of harbor seal and gray seal Level B behavioral harassment takes. Harbor seal Level B behavioral harassment takes have been adjusted upwards by multiplying the average number of harbor seals sighted per day from May through December 2020 (721 sightings divided by 150 days of monitoring, or 5 harbor seals/day) by the number of actual construction days (159), resulting in 795 Level B behavioral harassment takes. Gray seal Level B harassment takes have been increased utilizing the same approach (47 sightings divided by 150 days of monitoring, or 0.31 gray seals/day), resulting in 50 Level B behavioral harassment takes.

NMFS authorized one Level B harassment take per month for both hooded seals and harp seals for the Berth 11 Waterfront Improvements construction project in both 2018 and 2019. Following the same approach, the Navy has requested, and NMFS has authorized, one Level B harassment take each of hooded seals and harp seals per month of construction from January through May, when these species may occur in the vicinity of DD1 (total of 5 Level B harassment takes for each species).

The total number of takes authorized is presented in Table 11. Non-auditory take estimates were zero for all species and are, therefore, not included in Table 11.

**Table 11. Takes Authorized.**

Marine Mammals	Underwater Vibratory Pile-driving and Drilling Criteria ( <i>e.g.</i> , non-impulsive/continuous sounds)			Underwater Impact Pile-driving and Blasting Criteria ( <i>e.g.</i> , impulsive sounds)					Total estimated takes	Authorized takes	Percent population (%)
	Level A (PTS onset) Threshold 173 dB Harbor Porpoise	Level A (PTS onset) Threshold 201 dB Seals	Level B (Behavioral) Harassment Threshold 120 dB <sup>2</sup> RMS	Level A (PTS onset) Threshold 155 dB <sup>1</sup> SEL Harbor Porpoise	Level A (PTS onset) 185 dB SEL Seals	Level B (Behavioral) Harassment Threshold 160 dB <sup>2</sup> RMS	Level B (Behavioral) Harassment Threshold 135 dB <sup>1</sup> SELcum Harbor Porpoise	Level B (Behavioral) Harassment Threshold 165 dB <sup>1</sup> SELcum Seals			
Harbor porpoise	0	NA	2 <sup>D</sup>	2 <sup>B</sup>	NA	0	0	NA	4	4	0.00
Harbor seal	NA	0	29 <sup>V</sup> /135 <sup>D</sup>	NA	6 <sup>1</sup> /6 <sup>B</sup>	2	NA	83 <sup>B</sup>	261	807	3.01
Gray seal	NA	0	1 <sup>V</sup> /11 <sup>D</sup>	NA	1 <sup>B</sup>	0	NA	7 <sup>B</sup>	20	51	0.00
Hooded seal	NA	0	5	NA	0	0	NA	0	5	5	0.00
Harp seal	NA	0	5	NA	0	0	NA	0	5	5	0.00

<sup>1</sup> dB re 1 µPa<sup>2</sup>-s.

<sup>2</sup> dB re 1µPa RMS.

<sup>D</sup> Drilling

<sup>B</sup> Blasting

<sup>V</sup> Vibratory pile-driving

<sup>1</sup> Impact pile-driving

## **Mitigation Requirements**

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, NMFS carefully considers two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

In addition to the measures described later in this section, the Navy will employ the following standard mitigation measures:

- The Navy must employ PSOs, establish monitoring locations, and monitor the project area to the maximum extent possible based on the required number of PSOs, required monitoring locations, and environmental conditions;
- Monitoring must take place from 30 minutes prior to initiation of construction activities through 30 minutes post-completion of pile-driving and drilling, and 60 minutes post-completion of blasting events;
- The Navy must conduct a briefing between construction supervisors and crews and the marine mammal monitoring team prior to the start of construction, and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures;
- For in-water and over-water heavy machinery work, if a marine mammal comes within 10 m, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions;
- With the exception of pre-dawn drilling, work must only occur during daylight hours, when visual monitoring of marine mammals can be conducted;
- For those marine mammals for which take has not been requested, pile driving and removal, drilling, and blasting will shut down immediately when the animals are sighted approaching the Level B harassment zone;
- If take reaches the authorized limit for an authorized species, activity for which take is authorized will be stopped as these species approach the Level B harassment zone to avoid additional take;
- Blasting will not begin until at least one sheet pile face of the west closure wall has been installed;



- Blasting must only occur in good visibility conditions between 30 minutes after sunrise and one hour before sunset;
- Stemming procedures must be used for blasting events; and
- A double bubble curtain will be installed across any openings at the entrance of DD1 to mitigate underwater noise impacts outside of the super flood basin during pre-dawn drilling of blast-charge holes and blasting events.

The following measures will apply to the Navy's mitigation requirements:

*Monitoring Harassment Zones* – Before the commencement of in-water construction activities (*i.e.*, impact pile driving, vibratory pile driving and pile removal, drilling, and blasting), Level B harassment and Level A harassment zones must be established for purposes of monitoring. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project area outside of the shutdown zone (see below) and thus prepare for a potential cease of activity should the animal enter the shutdown zone. All Level B harassment monitoring zones for the construction activities are equivalent to the maximum ensonified zone, adjusted for landmass interception, or 0.418 km<sup>2</sup>. Similarly, harassment monitoring zones must be established for the PTS isopleths associated with each functional hearing group.

*Shutdown Zones* – The Navy will implement shutdown zones for all pile driving and removal, drilling, and blasting activities. The purpose of a shutdown is to prevent some undesirable outcome, such as auditory injury or severe behavioral disturbance of sensitive species, by halting the activity. If a marine mammal is observed entering or within the respective shutdown zone (Table 12) after a construction activity has begun, the PSO will request a temporary cessation of the construction activity. On days when multiple activities are occurring concurrently, the largest shutdown zone between/among the activities will be implemented. The shutdown zone for blasting will be the entire region of influence (ROI), equivalent to the maximum ensonified zone adjusted for

landmass interception (0.335 km<sup>2</sup>). If shutdown zones are obscured by fog or poor lighting conditions, pile-driving and blasting will not be initiated until the entire shutdown zones are visible.

Although drilling activities may occur during pre-dawn hours in order to maintain the project schedule, the shutdown distance for drilling is small (10 m) and will likely be entirely visible for monitoring despite visibility limitations during this timeframe. As mentioned previously, drilling will not occur between sunset and pre-dawn hours.

Shutdown zones typically vary based on the activity type and marine mammal hearing group. A summary of the shutdown zones is provided in Table 12.

**Table 12. Shutdown Zones Distances for Construction Activities and Marine Mammal Hearing Groups.**

Pile type, size & driving method	Shutdown distance (m)	
	HF cetacean	Phocid
Vibratory drive 30-inch steel pipe piles	70	30
Vibratory extraction 30-inch steel pipe piles	70	30
Impact drive 28-inch steel sheet piles	110	50
Vibratory drive 28-inch steel sheet piles	25	10
Impact drive 18-inch sheet piles	110	50
Vibratory drive 18-inch sheet piles	15	10
Drilling 4.5-inch blast charge holes	10	10
Blasting 120 lb charge	Entire ROI <sup>1</sup>	Entire ROI

<sup>1</sup>Region of influence (ROI) for blasting is the maximum ensonified area (0.335 km<sup>2</sup>).

*Pre-start Clearance Monitoring* – Prior to the start of daily in-water construction activity, or whenever a break in pile driving/removal or drilling of 30 minutes or longer occurs, PSOs will observe the shutdown zones for a period of 30 minutes. The shutdown zone will be considered cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zone, no construction activity, including soft-start (see below), can proceed until the animal has voluntarily left the zone or has not been observed for 15 minutes. When a marine mammal for which Level B harassment take is authorized is present in the Level B harassment zone, activities may begin. If the entire Level B harassment zone is not

visible at the start of construction, pile driving activities can begin. If work ceases for more than 30 minutes, the pre-activity monitoring of the shutdown zones will commence.

*Soft Start* – The use of a soft start procedure is believed to provide additional protection to marine mammals by warning marine mammals or providing them with a chance to leave the area prior to the hammer operating at full capacity, and typically involves a requirement to initiate sound from the hammer at reduced energy followed by a waiting period. The Navy will provide an initial set of strikes from the impact hammer at reduced energy, followed by a 30 second waiting period, and then two subsequent sets. NMFS notes that it is difficult to specify the reduction in energy for any given hammer because of variation across drivers and, for impact hammers, the actual number of strikes at reduced energy will vary because operating the hammer at less than full power results in “bouncing” of the hammer as it strikes the pile, resulting in multiple “strikes”. Soft start will be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.

Based on our evaluation of the required measures, NMFS has determined that the prescribed mitigation measures provide the means effecting the least practicable adverse impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

### **Monitoring and Reporting Requirements**

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected

to be present in the action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

### *Monitoring Requirements*

The Navy shall employ trained PSOs to conduct marine mammal monitoring for its PNSY modification and expansion project. The purposes of marine mammal

monitoring are to implement mitigation measures and learn more about impacts to marine mammals from the Navy's construction activities.

#### Protected Species Observer Qualifications

NMFS-approved PSOs shall meet the following requirements:

1. Independent observers (*i.e.*, not construction personnel) are required;
2. At least one observer must have prior experience working as an observer;
3. Other observers may substitute education (undergraduate degree in biological science or related field) or training for experience;
4. Where a team of three or more observers are required, one observer should be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as an observer; and
5. NMFS will require submission and approval of observer curricula vitae (CVs).

#### Marine Mammal Monitoring Protocols

The Navy will monitor all Level B harassment zones and Level A harassment zones before, during, and after construction activities. The Marine Mammal Monitoring Plan must include the following procedures:

- At least two (2) PSOs shall be posted to monitor marine mammals during in-water pile driving and removal, drilling, and blasting. Additional PSOs will be required in conditions of low visibility (*i.e.*, rain or light fog), for activities producing the largest ensonified zones, and/or if marine mammal occurrence is higher than expected in the project area;
- PSOs must be stationed at the best possible vantage point(s) in order to properly see the entire shutdown zone(s) and zones associated with behavioral impact thresholds, which may include the following locations: Berth 2, Berth 12, Isle of Shoals

Steamship Company, Prescott Park, Four Tree Island, Peirce Island, and/or a boat or barge within the project limits;

- PSOs must record all observations of marine mammals, regardless of distance from the construction activity;
- During all observation periods, PSOs will use high-magnification (25X), as well as standard handheld (7X) binoculars, and the naked eye to search continuously for marine mammals;
- Monitoring distances will be measured with range finders. Distances to animals will be based on the best estimate of the PSO, relative to known distances to objects in the vicinity of the PSO;
- Pile driving and removal, drilling, and blasting will only take place when the shutdown zones are visible and can be adequately monitored. If conditions (*e.g.*, fog) prevent the visual detection of marine mammals, activities with the potential to result in Level A harassment shall not be initiated. If such conditions arise after the activity has begun, blasting and impact pile driving or removal will be halted but drilling and vibratory pile driving or removal will be allowed to continue;

Information Collection:

PSOs shall collect the following information during marine mammal monitoring:

- PSO locations during monitoring;
- Date and time that monitored activity begins and ends for each day conducted (monitoring period);
- Construction activities occurring during each daily observation period, including how many and what type of piles driven, number of blast holes drilled, and number or blast events;
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly); including Beaufort sea

state and any other relevant weather conditions, including cloud cover, fog, sun glare, and estimated observable distance;

- For each marine mammal sighting:
  - Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting;
  - Time of sighting;
  - Species, numbers, and, if possible, sex and age class of marine mammals;
  - Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from construction activity;
  - Location, distance, and bearing from pile driving, drilling, and blasting activities to marine mammals and distance from the marine mammals to the observation point;
  - Animal's closest point of approach and estimated amount of time that the animals remained in the Level B harassment and Level A harassment zones; and
  - Detailed information about implementation of any mitigation (*e.g.*, shutdowns or delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any.
  - Percentage of time that activities (*i.e.*, drilling) occur at night.

#### Hydroacoustic monitoring

The Navy must conduct hydroacoustic monitoring of in-water construction activities, including the installation of (10) 28-inch Z-shaped sheet piles and (10) 18-inch flat-webbed sheet piles for both impact and vibratory pile driving, (4) 30-inch steel piles for vibratory pile driving, (10) 120 lbs blasting events, and (10) 4.5-inch blast-charge

hole drilling events. Near-field monitoring will occur at 10 m from the pile driving hammers and drilling location. During blasting, near-field data will be collected using a pressure transducer to estimate sound levels based on received impulse. The far-field hydrophone will be placed as far from the acoustic source as is practicable, although the distance will be limited by DD1's proximity to a navigable channel outside of the entrance to the super flood basin. Monitoring will only be conducted when concurrent activities are not occurring, limiting interference in the recordings from other sources of noise in the environment.

### *Reporting Requirements*

The Navy is required to submit a draft monitoring report (including all PSO data sheets and/or raw sighting data) within 90 days after completion of the construction work or the expiration of the IHA, whichever comes earlier. This report must detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been harassed. The draft hydroacoustic monitoring report must be submitted within the same timeframe and must contain the informational elements described in the hydroacoustic monitoring plan for all acoustically monitored events, including: a description of the hydrophones used, hydrophone locations (both near- and far-field) and water depths, recording device(s), distance from the acoustic source, and sediment type at the recording location; type and size of pile being driven, method of pile-driving during recording (hammer model and energy), and total driving/removal or drilling duration. For impact pile driving, the Navy must also report: number of strikes and strike rate, depth of substrate penetrated, pulse duration, and mean, median, and maximum sound levels (db re 1  $\mu$  Pa) (root mean square sound pressure level ( $SPL_{rms}$ ); cumulative sound exposure level ( $SEL_{cum}$ ), peak sound pressure level ( $SPL_{peak}$ ), and single-strike sound exposure level ( $SEL_{s-s}$ )). For vibratory pile driving or removal and drilling, the Navy must also report: median, minimum and



maximum sound levels (db re 1  $\mu$  Pa) (SPL<sub>rms</sub>, SEL<sub>cum</sub>), and the timeframe over which the sound is averaged. For blast events, the Navy must also report: number of blast events per day, time between blast events if two are conducted within a 24-hour period, total number of charges/delays, maximum net explosive weight (NEW) of a single charge and the total NEW of the event, timeframe between delays and total timeframe of event, impulse in Pa-sec, SPL<sub>peak</sub> for each event and SEL<sub>cum</sub> values for the entire 24 hours over which blasting occurs. For all activities, reported SPL<sub>rms</sub> values must be based on a time window that consists of 90 percent of the acoustic energy. Power spectral density plots and one-third octave band spectra must be provided for all acoustically monitored construction activities. If, for any reason, the total number of events included in the hydroacoustic monitoring plan are not monitored within the overall construction timeframe, the Navy must report the actual number of events monitored. NMFS will have an opportunity to provide comments on the report and, if NMFS has comments, the Navy will address the comments and submit a final report to NMFS within 30 days.

The Navy is required to notify NMFS' Office of Protected Resources (OPR) and NMFS' Greater Atlantic Regional Stranding Coordinator or local stranding network at least 24 hours prior to commencing blasting events as well as within 24 hours after blasting events cease. If blasting events occur on consecutive days, the Navy must communicate how long the blasting is scheduled to last as well as when it is completed. In addition, in the event that personnel involved in the construction activities discover an injured or dead marine mammal, the Navy must immediately report the incident to NMFS OPR and the Stranding Coordinator or local stranding network and follow any instructions provided by the Stranding Coordinator or stranding network. If the death or injury was clearly caused by the specific activity, the Navy must immediately cease the specified activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance

with the terms of the IHA. The Navy must not resume their activities until notified by NMFS OPR. The Navy shall provide NMFS OPR and the Stranding Coordinator or local stranding network with the species or description of the animal(s), the condition of the animal(s) (including carcass condition, if the animal is dead), location, time of first discovery, observed behaviors (if alive), and photo or video (if available).

In the event that the Navy finds an injured or dead marine mammal that is not in the construction area, the Navy would report the same information as listed above to the Stranding Coordinator or local stranding network and NMFS OPR as soon as is operationally feasible.

### **Negligible Impact Analysis and Determination**

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. NMFS also assesses the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’ implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*,

as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

Pile driving and removal, drilling, and blasting activities associated with the project, as described previously, have the potential to disturb or temporarily displace marine mammals. The specified activities may result in take, in the form of Level A harassment (potential injury; from impact pile driving or blasting) or Level B harassment (potential behavioral disturbance or TTS) from underwater sounds generated from pile driving (impact and vibratory), drilling and blasting. Potential takes could occur if individual marine mammals are present in the ensonified zone when pile driving, drilling, or blasting activities are occurring.

To avoid repetition, this introductory discussion of NMFS' analysis applies to all of the species listed in Table 2, given that the anticipated effects of the Navy's PNSY modification and expansion construction project activities on marine mammals are expected to be relatively similar in nature. There is no information about the nature or severity of the impacts, or the size, status, or structure of any species or stock that would lead to a different analysis by species for this activity, or else species-specific factors would be identified and analyzed.

Although some individual harbor porpoises and harbor and gray seals are estimated to experience Level A harassment in the form of PTS if they remain within the impact pile driving Level A harassment zone for an entire day, or are present within the Level A harassment zone during a blasting event, the degree of injury is expected to be mild and is not likely to affect the reproduction or survival of the individual animals. It is expected that, if hearing impairments occurs as a result of impact pile driving or blasting, the affected animal would lose a few dB in its hearing sensitivity, which in most cases is not likely to affect its survival and recruitment. Hearing impairment that might occur for these individual animals would be limited to the dominant frequency of the noise sources,

(*i.e.*, in the low-frequency region below 2 kHz). Nevertheless, as for all marine mammal species, it is anticipated that, in general, these pinnipeds will avoid areas where sound levels could cause hearing impairment. Therefore, it is not likely that an animal would stay in an area with intense noise that could cause severe levels of hearing damage.

Under the majority of the circumstances, anticipated takes are expected to be limited to short-term Level B behavioral harassment or TTS. Marine mammals present in the vicinity of the action area and taken by Level B harassment would most likely show overt brief disturbance (startle reaction) from blasting events and avoidance of the area impacted by elevated noise levels during pile driving (and removal) and drilling. Given the limited estimated number of predicted incidents of Level B harassment and Level A harassment and the limited, short-term nature of the responses by the individuals, the impacts of the estimated take cannot be reasonably expected to, and are not reasonably likely to, rise to the level that they would adversely affect the species considered here at the population level, through effects on annual rates of recruitment or survival. There are no known important habitats, such as rookeries or haulouts, in the vicinity of the Navy's PNSY DD1 modification and expansion construction project. The project also is not expected to have significant adverse effects on affected marine mammals' habitat, including prey, as analyzed in detail in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section in the **Federal Register** notice for the proposed IHA (86 FR 18244; April 8, 2021).

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized;
- Some individual marine mammals might experience a mild level of PTS,

but the degree of PTS is not expected to affect their survival;

- Most adverse effects to marine mammals are likely to be temporary behavioral harassment or TTS; and
- No biologically important area is present in or near the construction area.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the activity will have a negligible impact on all affected marine mammal species or stocks.

### **Small Numbers**

As noted above, only small numbers of incidental take may be authorized under section 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is less than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS authorizes incidental take of 5 marine mammal stocks. The total amount of take authorized is three percent or less for all five of these stocks (Table 11).

Based on the analysis contained herein of the activity (including the prescribed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

### **Unmitigable Adverse Impact Analysis and Determination**

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

### **Endangered Species Act (ESA)**

No incidental take of ESA-listed species is authorized or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

### **National Environmental Policy Act**

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHA with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which NMFS has not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

### **Authorization**

As a result of these determinations, NMFS has issued an IHA to the Navy for the taking of marine mammals incidental to modification and expansion of the Portsmouth Naval Shipyard Dry Dock 1 in Kittery, Maine, effective for one year from the date of issuance, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A copy of the final IHA can be found at

*<https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>.*

Dated: June 3, 2021.

Catherine Marzin,

Acting Director, Office of Protected Resources,

National Marine Fisheries Service.

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